

In Re:

Annual Review of Base Rates
For Fuel Costs for
Duke Energy Carolinas, LLC

BEFORE THE
PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

COVER SHEET

DOCKET
NUMBER: 2008-3-E

(Please type or print)

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DOCKETING INFORMATION (Check all that apply)

- ☐ Emergency Relief demanded in petition ☐ Request for item to be placed on Commission's Agenda expeditiously
- ☐ Other: Testimony of Ronald A. Jones

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)		
<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Affidavit	<input type="checkbox"/> Letter	<input type="checkbox"/> Request
<input type="checkbox"/> Electric/Gas	<input type="checkbox"/> Agreement	<input type="checkbox"/> Memorandum	<input type="checkbox"/> Request for Certificatio
<input type="checkbox"/> Electric/Telecommunications	<input type="checkbox"/> Answer	<input type="checkbox"/> Motion	<input type="checkbox"/> Request for Investigatio
<input type="checkbox"/> Electric/Water	<input type="checkbox"/> Appellate Review	<input type="checkbox"/> Objection	<input type="checkbox"/> Resale Agreement
<input type="checkbox"/> Electric/Water/Telecom.	<input type="checkbox"/> Application	<input type="checkbox"/> Petition	<input type="checkbox"/> Resale Amendment
<input type="checkbox"/> Electric/Water/Sewer	<input type="checkbox"/> Brief	<input type="checkbox"/> Petition for Reconsideration	<input type="checkbox"/> Reservation Letter
<input type="checkbox"/> Gas	<input type="checkbox"/> Certificate	<input type="checkbox"/> Petition for Rulemaking	<input type="checkbox"/> Response
<input type="checkbox"/> Railroad	<input type="checkbox"/> Comments	<input type="checkbox"/> Petition for Rule to Show Cause	<input type="checkbox"/> Response to Discovery
<input type="checkbox"/> Sewer	<input type="checkbox"/> Complaint	<input type="checkbox"/> Petition to Intervene	<input type="checkbox"/> Return to Petition
<input type="checkbox"/> Telecommunications	<input type="checkbox"/> Consent Order	<input type="checkbox"/> Petition to Intervene Out of Time	<input type="checkbox"/> Stipulation
<input type="checkbox"/> Transportation	<input type="checkbox"/> Discovery	<input checked="" type="checkbox"/> Prefiled Testimony	<input type="checkbox"/> Subpoena
<input type="checkbox"/> Water	<input type="checkbox"/> Exhibit	<input type="checkbox"/> Promotion	<input type="checkbox"/> Tariff
<input type="checkbox"/> Water/Sewer	<input type="checkbox"/> Expedited Consideration	<input type="checkbox"/> Proposed Order	<input type="checkbox"/> Other:
<input type="checkbox"/> Administrative Matter	<input type="checkbox"/> Interconnection Agreement	<input type="checkbox"/> Protest	
<input type="checkbox"/> Other:	<input type="checkbox"/> Interconnection Amendment	<input type="checkbox"/> Publisher's Affidavit	
	<input type="checkbox"/> Late-Filed Exhibit	<input type="checkbox"/> Report	

**CONFIDENTIAL,
PROPRIETARY INFORMATION REDACTED**

1 **Q. PLEASE STATE YOUR NAME, ADDRESS AND POSITION.**

2 A. My name is Ronald A. Jones. My business address is 526 South Church Street,
3 Charlotte, North Carolina. I am Senior Vice President, Nuclear Operations for Duke
4 Power Company LLC d/b/a Duke Energy Carolinas, LLC ("Duke Energy Carolinas"
5 or the "Company").

6 **Q. WHAT ARE YOUR PRESENT RESPONSIBILITIES AT DUKE ENERGY**
7 **CAROLINAS?**

8 A. As Senior Vice President of Nuclear Operations, I am responsible for providing
9 direct oversight for the day-to-day safe and reliable operation of all three Duke
10 Energy Carolinas-operated nuclear stations -- Oconee, McGuire and Catawba. This
11 includes providing direction for operations, security, safety, engineering,
12 maintenance, radiation protection, chemistry, etc. In addition, in February 2008, I
13 assumed responsibility for the nuclear fleet support and major projects
14 organizations.

15 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**
16 **PROFESSIONAL EXPERIENCE.**

17 A. I graduated from Virginia Polytechnic Institute and State University in Blacksburg,
18 Virginia with a Bachelor of Science degree in electrical engineering. I am a member
19 of the American Nuclear Society and the Institute of Electrical and Electronic
20 Engineers; I am Chairman of the Pressurized Water Reactors Owners Group
21 Executive Management Group and Executive Committee; I am Chairman of the
22 Carolinas Nuclear Cluster; and I am an executive member of the Nuclear Energy
23 Institute Nuclear Security and Workforce Working Groups. I am also a current

1 member of the Board of Directors for Junior Achievement of the Central Carolinas
2 and the Lake Norman Charter School. I began my career at Duke Energy Carolinas
3 (formerly known as Duke Power Company) in 1980 as an engineer at Catawba
4 Nuclear Station. I received my senior operator license in 1987. After a series of
5 promotions, I was named Manager, Maintenance Engineering in 1988;
6 Superintendent, Instrument and Electrical in 1991; Superintendent, Operations,
7 McGuire Nuclear Station in 1994; Station Manager, Catawba Nuclear Station in
8 1997; and Station Manager, Oconee Nuclear Station in 2001. I was named Vice
9 President, Oconee Nuclear Station in 2002. I was named to Senior Vice President of
10 Nuclear Operations in January 2006.

11 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
12 **PROCEEDING?**

13 A. The purpose of my testimony is to discuss the performance of Duke Energy
14 Carolinas' nuclear generation fleet during the July 2007 through May 2008 actual
15 period under review and describe changes forthcoming in the June 2008 through
16 September 2009 forecast period.

17 **Q. YOUR TESTIMONY INCLUDES 3 EXHIBITS. WERE THESE EXHIBITS**
18 **PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR**
19 **SUPERVISION?**

20 A. Yes. These exhibits were prepared at my direction and under my supervision.

21 **Q. PLEASE PROVIDE A DESCRIPTION OF THE EXHIBITS.**

22 A. The exhibits and descriptions are as follows:

1 Jones Exhibit 1 - Calculation of the nuclear capacity factor for the actual
2 period pursuant to SC Code Ann. § 58-27-865

3 Jones Exhibit 2 - Nuclear outage data for the actual period

4 Jones Exhibit 3 - Nuclear outage data for the forecast period

5 **Q. PLEASE DESCRIBE DUKE ENERGY CAROLINAS' NUCLEAR**
6 **GENERATION PORTFOLIO.**

7 A. Duke Energy Carolinas' nuclear generation portfolio consists of approximately
8 5,000 MWs of generating capacity, made up as follows:

9 Oconee Nuclear Station - 2,538 MWs

10 McGuire Nuclear Station - 2,200 MWs

11 Catawba Nuclear Station - 282 MWs (Duke Energy Carolinas' 12.5%

12 ownership of the Catawba Nuclear Plant)

13 **Q. MR. JONES, PLEASE PROVIDE A GENERAL DESCRIPTION OF DUKE**
14 **ENERGY CAROLINAS' NUCLEAR GENERATION ASSETS.**

15 A. Duke Energy Carolinas' nuclear fleet consists of three generating stations with
16 seven generation units. Oconee Nuclear Station, located in Oconee County, South
17 Carolina, began commercial operation in 1973 and was the first nuclear station
18 designed, built and operated by Duke Energy Carolinas. It has the distinction of
19 being the second nuclear station in the country to have its license renewed by the
20 Nuclear Regulatory Commission ("NRC"). The operating licenses for Oconee 1, 2,
21 and 3, originally issued for 40 years, were renewed for an additional 20 years until
22 2033, 2033 and 2034, respectively. McGuire Nuclear Station, located in
23 Mecklenburg County, North Carolina began commercial operation in 1981. Duke

1 Energy Carolinas jointly owns the Catawba Nuclear Station, located on Lake Wylie
2 in York County, South Carolina, with North Carolina Municipal Power Agency
3 Number One ("NCMPA"), North Carolina Electric Membership Corporation
4 ("NCEMC"), Piedmont Municipal Power Agency ("PMPA") and Saluda River
5 Electric Cooperative, Inc. ("Saluda River"). In 2003, the NRC renewed the licenses
6 for McGuire and Catawba, extending operations until 2041 (McGuire 1) and 2043
7 (McGuire 2, Catawba 1 and 2). In December 2006, the Company and NCEMC
8 announced agreements to purchase Saluda River's ownership interest in unit 1 of
9 Catawba Nuclear Station subject to approval by various state and federal agencies.
10 The Commission approved the amendment to the Certificate of Environmental
11 Compatibility and Public Convenience and Necessity (the "Certificate") for the
12 Catawba station to reflect the transfer of Saluda River's interest to Duke Energy
13 Carolinas and NCEMC by Order No. 2008-468 in Docket No. 2008-117-E.
14 Following the planned October 2008 closing of the purchase, Duke Energy
15 Carolinas ownership interest in the Catawba station will increase from 12.5% to
16 19.35% (282 MW to 437 MW). The Company's nuclear fleet supplied almost half
17 of the power used by its customers during the actual period.

18 **Q. WHAT ARE THE COMPANY'S OBJECTIVES IN THE OPERATION OF**
19 **ITS NUCLEAR GENERATION ASSETS?**

20 A. The primary objective of Duke Energy Carolinas' nuclear generation department is
21 to provide safe, reliable and cost-effective electricity to our Carolinas customers.
22 This objective is achieved though our focus in a number of key areas. Operations
23 personnel and other station employees are well-trained and execute their

1 responsibilities to the highest standards, in accordance with detailed procedures. We
2 maintain station equipment and systems reliably, and ensure timely implementation
3 of work plans and projects that enhance the performance of systems, equipment and
4 personnel. Station refueling outages are conducted through the precise execution of
5 well-planned, quality work activities, which effectively ready the plant for operation
6 until the next planned outage.

7 **Q. MR. JONES, PLEASE DISCUSS THE PERFORMANCE OF THE**
8 **COMPANY'S NUCLEAR GENERATING SYSTEM DURING THE**
9 **ACTUAL PERIOD UNDER REVIEW OF JULY 2007 THROUGH MAY**
10 **2008.**

11 **A.** During the actual period, all three of Duke Energy Carolinas' nuclear stations
12 continued to be recognized by INPO for excellence in nuclear plant performance.
13 The Electric Power Research Institute has ranked Catawba Nuclear Station as the
14 third most thermally efficient nuclear power plant in the United States. In 2007,
15 Catawba Unit 2 had the fourth lowest heat rate in the country and Catawba Unit 1
16 came in fifth with heat rates of 9,529 Btu per kWh and 9,533 Btu per kWh,
17 respectively. The Company's 2007 nuclear system total capacity factor was 92.36
18 percent which was the third highest capacity factor in fleet history. In addition,
19 Oconee Unit 1, McGuire Unit 2 and Catawba Unit 1 set capacity factor records of
20 98.98 percent, 103.44 percent and 101.83 percent, respectively.

21 The Company's nuclear plants operated extremely well during the actual
22 period. Jones Exhibit 1 sets forth the achieved nuclear capacity factor for the period

1 July 2007 through May 2008 based on the criteria set forth in Section 58-27-865,
2 Code of Laws of South Carolina. The statute states in pertinent part as follows:

3 There shall be a rebuttable presumption that an electrical utility made
4 every reasonable effort to minimize cost associated with the
5 operation of its nuclear generation facility or system, as applicable, if
6 the utility achieved a net capacity factor of ninety-two and one-half
7 percent or higher during the period under review. The calculation of
8 the net capacity factor shall exclude reasonable outage time....
9

10 As shown on Jones Exhibit 1, Duke Energy Carolinas achieved a net nuclear
11 capacity factor, excluding reasonable outage time, of 102.74% for the current period
12 under review. This capacity factor is well above the 92.5% set forth in S.C. Code §
13 58-27-865.

14 **Q. PLEASE DISCUSS OUTAGES OCCURING AT THE COMPANY'S**
15 **NUCLEAR FACILITIES DURING THE JULY 2007 THROUGH MAY 2008**
16 **ACTUAL PERIOD.**

17 **A.** In general, refueling requirements, maintenance requirements, prudent maintenance
18 practices and NRC operating requirements impact the availability of the Company's
19 nuclear system. Over the course of the years of operating the nuclear fleet the
20 Company's nuclear performance has improved dramatically. In particular, shorter
21 refueling outages and improved forced outage rates have contributed to increasing
22 the capacity factors achieved by the Company's nuclear fleet to consistently above
23 90% in recent years. Duke Energy Carolinas continues to be a leader in nuclear
24 performance; however, the Company is not alone in its excellence. The nuclear
25 industry as a whole has been making great strides in improving operating
26 performance. In an effort to continue this trend, the nuclear organization is placing

1 additional focus on pre-outage planning and milestone adherence through a fleet-
2 wide approach to outage planning.

3 In general, if an unanticipated issue is discovered while a unit is offline for a
4 scheduled outage that has the potential to become an online reliability issue, the
5 outage is usually extended to take the time to perform necessary maintenance or
6 repairs prior to returning the unit to service. It is our belief that such extensions
7 during non-peak periods result in longer continuous run times and fewer forced
8 outages thereby reducing fuel costs in the long run. In the event that a unit is forced
9 off line, every effort is made to safely return the unit to service as quickly as
10 possible.

11 There were five refueling and maintenance outages during the actual period,
12 including four that were extended or delayed due to various reasons. The Catawba
13 Unit 2 fall outage included work necessary for completion of the NRC-required
14 sump modification. The Oconee Unit 3 fall outage, which included necessary
15 refurbishment work, met or exceeded six of seven outage goals. During the
16 McGuire Unit 2 spring outage, the unit was forced off line immediately after being
17 returned to service as a result of the failure of a condenser cooling water valve to
18 operate, which resulted in four forced outage days. The outage was further delayed
19 because of an equipment issue encountered during leak testing. The Oconee Unit 1
20 spring outage was extended just over twenty days as a result of reactor coolant pump
21 seal failures during the unit shutdown for refueling, which required major
22 modifications to resolve. Finally, the Catawba Unit 1 spring outage was delayed
23 briefly because of an equipment-related issue experienced during start up. Jones

1 Exhibit 2 shows the dates of and explanations for all outages of a week or more in
2 duration experienced during the actual period.

3 **Q. MR. JONES, DID THE DROUGHT CONDITIONS DESCRIBED BY**
4 **WITNESS ROEBEL HAVE ANY IMPACT ON NUCLEAR**
5 **PERFORMANCE IN THE ACTUAL PERIOD?**

6 A. No, they did not. However, in order to ensure that generation is available if drought
7 conditions continue or reoccur in the future, the Company spent approximately \$8.5
8 million on piping modifications at McGuire. The modifications allow for operation
9 of the McGuire units at lake elevations up to 15 feet below full pond, which would
10 enable continued operations if Lake Norman elevations were to drop 8 feet below
11 the prior administratively controlled elevation. This work was completed during the
12 Spring 2008 refueling and maintenance outage.

13 **Q. PLEASE DISCUSS THE PLANNED OUTAGE SCHEDULE FOR THE**
14 **JUNE 2008 THROUGH SEPTEMBER 2009 FORECAST PERIOD.**

15 A. Jones Exhibit 3 shows the dates of and explanations for forecast outages of a week
16 or more in duration. *****BEGIN CONFIDENTIAL***** [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

1

[REDACTED]

2

[REDACTED]

END CONFIDENTIAL

3

Q. MR. JONES, DOES THAT CONCLUDE YOUR TESTIMONY?

4

A. Yes, it does.

DUKE ENERGY CAROLINAS
SOUTH CAROLINA FUEL CLAUSE
2008 ANNUAL FUEL HEARING
NUCLEAR PLANT PERFORMANCE
CAPACITY FACTOR 7/07 - 5/08

1	Nuclear System Actual Net Generation During Test Period	51,563,386 MWH
2	Total Number of Hours During Test Period	8,064
3	Nuclear System MDC During Test Period	6,996.0 MW
4	Reasonable Nuclear System Reductions	6,225,190 MWH
5	Nuclear System Capacity Factor $\left[\frac{1}{((2*3)-4)} \right] * 100$	<u>102.74</u> %

DUKE ENERGY CAROLINAS
SOUTH CAROLINA FUEL CLAUSE
2008 ANNUAL FUEL HEARING
NUCLEAR PLANT PERFORMANCE

Nuclear Outages Lasting One Week Or More - Actual Period

<u>Unit</u>	<u>Date of Outage</u>	<u>Explanation of Outage</u>
Oconee 1 (a)	04/12/08-05/31/08	Scheduled Refueling and Equipment Refurbishment - EOC 24; includes a 20 1/2 day delay due to reactor coolant pump seal failures during shutdown for refueling
Oconee 3	10/27/07-12/19/07	Scheduled Refueling - EOC 23; includes a 3 1/2 day delay due to equipment repair
McGuire 2	03/01/08-04/17/08	Scheduled Refueling - EOC 18; includes a 5 day extension due to emergent operations testing activities due to equipment issues and a 4 day delay due to failure of a condenser cooling water valve to operate
Catawba 1 (b)	5/03/08-05/31/08	Scheduled Refueling - EOC 17
Catawba 2	09/15/07-11/16/07	Scheduled Refueling - EOC 15; includes a 6 day extension primarily attributed to the containment integrated leak rate test (ILRT) results and the NRC required containment sump modification

(a) Note: Refueling concluded on June 1, 2008

(b) Note: Refueling concluded on June 21, 2008

DUKE ENERGY CAROLINAS
SOUTH CAROLINA FUEL CLAUSE
2008 ANNUAL FUEL HEARING
NUCLEAR PLANT PERFORMANCE

Nuclear Outages Lasting One Week Or More - Forecast Period

<u>Unit</u>	<u>Date of Outage</u>	<u>Explanation of Outage</u>
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JONES EXHIBIT 3